

European Journal of **Applied** **Microbiology and** **Biotechnology**

Volume 13 · 1981

Editorial Board

Editors

H. J. Rehm, Münster, *Editor in Chief*

A. L. Demain, Cambridge, Mass.
A. Fiechter, Zürich
R. M. Lafferty, Graz
W. Schmidt-Lorenz, Zürich
W. Schönborn, Frankfurt/Main
M. H. Zenk, München

Advisory Editors

W. Barz, Münster
M. J. Bakers, Riga
H. Blachère, Dijon
N. Blakebrough, Birmingham
A. T. Bull, Cardiff
H. Dellweg, Berlin
H. Diekmann, Hannover
P. Dunnill, London
K. Esser, Bochum
D. E. Eveleigh, New Brunswick
R. K. Finn, Ithaca
W. Frommer, Wuppertal
S. Fukui, Kyoto
W. Harder, Groningen

D. E. F. Harrison, Petersham
J. Hollo, Budapest
K. Kieslich, Stöckheim
N. W. F. Kossen, Delft
M. Linko, Helsinki
H. Metz, Darmstadt
D. A. A. Mossel, Utrecht
A. Oppermann, Frankfurt/Main
H. Sahm, Jülich
K. Schügerl, Hannover
H. J. Sinell, Berlin
H. Suomalainen, Helsinki
D. Thomas, Compiègne
G. T. Tsao, West Lafayette



Springer International

European Journal of Applied Microbiology and Biotechnology

The exclusive copyright for all languages and countries, including the right for photomechanical and any other reproductions, also in microform, is transferred to the Deutsche Geophysikalische Gesellschaft.

The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Authors of this journal can benefit from library and photocopy fees collected by VG WORT if certain conditions are met. If an author lives in the Federal Republic of Germany or in West Berlin it is recommended that he contacts Verwertungsgesellschaft WORT, Abteilung Wissenschaft, Goethestraße 49, D-8000 München 2, for detailed information.

Die in der Zeitschrift veröffentlichten Beiträge sind urheberrechtlich geschützt. Alle Rechte, insbesondere das der Übersetzung in fremde Sprachen, sind vorbehalten. Kein Teil dieser Zeitschrift darf ohne schriftliche Genehmigung der Deutschen Geophysikalischen Gesellschaft in irgendeiner Form – durch Fotokopie, Mikrofilm oder anderen Verfahren – reproduziert oder in eine von Maschinen, insbesondere von Datenverarbeitungsanlagen, verwendbare Sprache übertragen werden.

Auch die Rechte der Wiedergabe durch Vortrag, Funk- und Fernsehsendung, im Magnettonverfahren oder ähnlichem Wege bleiben vorbehalten.

Fotokopien für den persönlichen und sonstigen eigenen Gebrauch dürfen nur von einzelnen Beiträgen oder Teilen daraus aus Einzelkopien hergestellt werden. Jede im Bereich eines gewerblichen Unternehmens hergestellte oder benutzte Kopie dient gewerblichen Zwecken gem. § 54 (2) UrhG und verpflichtet zur Gebührenzahlung an die VG WORT, Abteilung Wissenschaft, Goethestraße 49, D-8000 München 2, von der die einzelnen Zahlungsmodalitäten zu erfragen sind.

Autoren dieser Zeitschrift können unter gewissen Voraussetzungen in die Individualauschüttung von Mitteln aus der Bibliothekantieme und dem Fotokopieraufkommen mit einbezogen werden. Genaue Informationen erteilt die Verwertungsgesellschaft WORT, Abteilung Wissenschaft, Goethestraße 49, D-8000 München 2.

Die Wiedergabe von Gebrauchsnamen, Handelsnamen, Warenbezeichnungen usw. in dieser Zeitschrift berechtigt auch ohne besondere Kennzeichnung nicht zu der Annahme, daß solche Namen im Sinne der Warenzeichen- und Markenschutz-Gesetzgebung als frei zu betrachten wären und daher von jedermann benutzt werden dürften.

Springer-Verlag Berlin Heidelberg New York
Printed in Germany by Beltz Offsetdruck, 6944 Hemsbach/Bergstr.
© by Springer-Verlag Berlin Heidelberg 1981

Contents

Biotechnology

- L. A. Baburin, J. E. Shvinka, U. E. Viesturs: Equilibrium Oxygen Concentration in Fermentation Fluids 15
- T. W. Barker, J. T. Worgan: The Application of Air-Lift Fermenters to the Cultivation of Filamentous Fungi 77
- W. Beyeler, A. Einsele, A. Fiechter: On-Line Measurements of Culture Fluorescence: Method and Application 10
- N. Blakebrough, M. Moresi: Modelling of the Process Yields of a Whey Fermentation 1
- D. E. Brune, J. T. Novak: The Use of Carbonate Equilibrium Chemistry in Quantifying Algal Carbon Uptake Kinetics 71
- A. A. Esener, J. A. Roels, N. W. F. Kossen, J. W. H. Roozenburg: Description of Microbial Growth Behaviour During the Wash-Out Phase; Determination of the Maximum Specific Growth Rate 141
- I. B. Holberg, P. Margalith: Alcoholic Fermentation by Immobilized Yeast at High Sugar Concentrations 133
- Y. Ishimori, I. Karube, S. Suzuki: Stress Sensitive Glucose Oxidase-Nylon Membrane 19
- Y. Ishimori, I. Karube, S. Suzuki: Ultrasound Sensitive Enzyme-Membrane 197
- A. Jones, I. A. Veliky: Examination of Parameters Affecting the 5 β - Hydroxylation of Digitoxigenin by Immobilised Cells of *Daucus carota* 84
- J. H. Kim, J. M. Lebeault: Protein Production from Whey Using *Penicillium cyclopium*; Growth Parameters and Cellular Composition 151
- R. Luttmann, M. Thoma, H. Buchholz, W. Scheiding, K. Schügerl: Growth Simulation of *Hansenula polymorpha*. I. Extension of Oxygen Cell Mass Balance Model 90
- R. Luttmann, M. Thoma, H. Buchholz, W. Scheiding, K. Schügerl: Growth Simulation of *Hansenula polymorpha*. II. Simulation of the Entire Cultivation 145
- H. K. Nielsen, S. C. Martiny: Mathematical Modelling of Enzyme Synthesis During Fermentations: The Q-Functions 67
- I. Sá-Correia, N. van Uden: Production of Biomass and Amylases by the Yeast *Lipomyces kononenkoae* in Starch-limited Continuous Culture 24
- T. Shiotani, T. Yamané: A Horizontal Packed-Bed Bioreactor to Reduce CO₂ Gas Holdup in the Continuous Production of Ethanol by Immobilized Yeast Cells 96

Industrial Microbiology

- P. Aleksieva, A. Djerova, B. Tchobanov, I. Grigorov: Submerged Cultivation of a Strain of *Humicola lutea* 72 Producing Acid Protease 165
- E. Blickstad, G. Molin: Growth and Lactic Acid Production of *Pediococcus pentosaceus* at Different Gas Environments, Temperatures, pH Values and Nitrite Concentrations 170
- E. O. Denenu, A. L. Demain: Relationship Between Genetic Deregulation of *Hansenula polymorpha* and Production of Tryptophan Metabolites 202
- J. C. Du Preez, D. F. Toerien, P. M. Latagan: Growth Parameters of *Acinetobacter calcoaceticus* on Acetate and Ethanol 45
- A. Haraldson, T. Björling: Yeast Strains for Concentrated Substrates 34
- E. B. Jensen, R. Nielsen, C. Emborg: The Influence of Acetic Acid on Penicillin Production 29
- J. H. Kim, S. Iibuchi, J. M. Lebeault: Quantitative Physiology of *Penicillium cyclopium* Grown on Whey for Production of Microbial Protein 208
- B. J. Macris: Production of Extracellular Lactase from *Fusarium moniliforme* 161
- G. Molin: The Impact of Dilution Rate and Attached Growth on Steady-State Characteristics of *Pseudomonas putida* 102
- K. W. Nickerson, J. D. Swanson: Removal of Contaminating Proteases from *Bacillus thuringiensis* Parasporal Crystals by Density Gradient Centrifugation in NaBr 213

- M. Rychtera, V. Kren, V. Grégr: Growth of Yeast *Candida utilis* in Crotonaldehyde Containing Media 39
- L. Sedlaczek, A. Jaworski, D. Wilmańska: Transformation of Steroids by Fungal Spores. I. Chemical Changes of *Cunninghamella elegans* Spores and Mycelium During Cortisol Hydroxylation 155
- M. L. Suihko, V. Mäkinen: *Candida krusei* in Baker's Yeast Production 113
- J. Szczodrak: Biosynthesis of Citric Acid in Relation to the Activity of Selected Enzymes of the Krebs Cycle in *Aspergillus niger* Mycelium 107

Environmental Microbiology

- A. M. Deschamps, J. P. Gillie, J. M. Lebeault: Direct Delignification of Untreated Bark Chips with Mixed Cultures of Bacteria 222
- M. Glanser, S. N. Ban, C. L. Cooney: Biodegradation of Sodium Sulfite Liquor (NaSSL) and Sodium Lignosulfonate (NaLS) by a Mixed Culture of Microorganisms 54
- K. Kino, N. Sugimoto, K. Kuroda, S. Usami: Biochemical Rust Removal by *Thiobacillus ferrooxidans* 128
- C. P. Kubicek: Release of Carboxymethyl-Cellulase and β -Glucosidase from Cell Walls of *Trichoderma reesei* 226
- O. Milstein, Y. Vered, J. Gressel, H. M. Flowers: Biodegradation of Wheat Straw Lignocarbhydrate Complexes (LCC) II. Fungal Growth on Aqueous Hydrolysate Liquors and Particulate Residues of Wheat Straw 117
- Y. L. Steinitz: Microbial Desulfonation of Lignosulfonate - A New Approach 216
- S. Takahashi, M. Itoh, Y. Kaneko: Treatment of Phenolic Wastes by *Aureobasidium pullulans* Adhered to the Fibrous Supports 175

Applied Microbiology

- G. Hansson, N. Molin: End Product Inhibition in Methane Fermentations: Effects of Carbon Dioxide and Methane on Methanogenic Bacteria Utilizing Acetate 236
- G. Hansson, N. Molin: End Product Inhibition in Methane Fermentations: Effects of Carbon Dioxide on Fermentative and Acetogenic Bacteria 242
- N. Kolarova, V. Farkaš: Sensitivity of Various Yeasts to Crude Cellulolytic Enzyme Complexes from *Trichoderma reesei* 184
- B. Kopp, H. J. Rehm: Studies on the Inhibition of Bacterial Macromolecule Synthesis by Roquefortine, a Mycotoxin from *Penicillium roqueforti* 232
- N. H. Piggott, I. W. Sutherland, T. R. Jarman: Enzymes Involved in the Biosynthesis of Alginate by *Pseudomonas aeruginosa* 179

Short Communications

- Z. Apostolidis, D. J. J. Potgieter: Determination of PHB in Activated Sludge by a Gas Chromatographic Method 62
- C. R. Corso, D. F. de Angelis, J. E. de Oliveira, C. Kiyan: Interaction Between the Diazo Dye "Vermelho Reanil P8B" and *Neurospora crassa* Strain, 74A 64
- E. R. Fraile, J. O. Muse, S. E. Bernardinelli: Milk-Clotting Enzyme from *Mucor bacilliformis* 191
- G. Greco Jr., A. M. Livolsi, M. R. Scarfi, F. Mansi, L. Gianfreda: Ultrafiltration Membrane Enzymatic Reactors, Polarized Versus Stirred Reactor Performance 251
- N. J. Moon, L. C. Moon, L. O. Ely, J. A. Parker: Lactic Acid Bacteria Active During the Fermentation of Wheat Silage in Small Scale Silos 248
- M. W. Platt, I. Chet, Y. Henis: Lignocellulose Degradation During Growth of the Mushroom *Pleurotus* sp. "Florida" on Cotton Straw 194
- E. Schröder, H. J. Rehm: Degradation of Long Chain n-Alkanes by Disrupted Cells of *Chlorella vulgaris* 188
- E. Stoppok, F. Wagner, F. Zadrazil: Identification of a Penicillin V Acylase Processing Fungus 60

Author Index

- Aleksieva, P. 165
 Angelis, D. F., de 64
 Apostolides, Z. 62
- Baburin, L. A. 15
 Ban, S. N. 54
 Barker, T. W. 77
 Bernardinelli, S. E. 191
 Beyeler, W. 10
 Björling, T. 34
 Blakebrough, N. 1
 Blickstad, E. 170
 Brune, D. E. 71
 Buchholz, H. 90, 145
- Chet, I. 194
 Cooney, C. L. 54
 Corso, C. R. 64
- Demain, A. L. 202
 Denenu, E. O. 202
 Deschamps, A. M. 222
 Djerova, A. 165
 Du Preez, J. C. 45
- Einsele, A. 10
 Ely, L. O. 248
 Emborg, C. 29
 Esener, A. A. 141
- Farkaš, V. 184
 Fiechter, A. 10
 Flowers, H. M. 117
 Fraile, E. R. 191
- Gianfreda, L. 251
 Gillie, J. P. 222
 Glanser, M. 54
 Greco, G. Jr. 251
 Grégr, V. 39
 Gressel, J. 117
 Grigorov, I. 165
- Hansson, G. 236, 242
 Haraldson, Å. 34
 Henis, Y. 194
 Holcberg, I. B. 133
- Iibuchi, S. 208
 Ishimori, Y. 19, 197
 Itoh, M. 175
- Jarman, T. R. 179
 Jaworski, A. 155
 Jensen, E. B. 29
 Jones, A. 84
- Kaneko, Y. 175
 Karube, I. 19, 197
 Kim, J. H. 151, 208
 Kino, K. 128
 Kiyan, C. 64
 Kolarova, N. 184
 Kopp, B. 232
 Kossen, N. W. F. 141
 Kren, V. 39
 Kubicek, C. P. 226
 Kuroda, K. 128
- Lategan, P. M. 45
 Lebeault, J. M. 151, 208, 222
 Livolsi, A. M. 251
 Luttmann, R. 90, 145
- Macris, B. J. 161
 Mäkinen, V. 113
 Mansi, F. 251
 Margalith, P. 133
 Martiny, S. C. 67
 Milstein, O. 117
 Molin, G. 102, 170
 Molin, N. 236, 242
 Moon, L. C. 248
 Moon, N. J. 248
 Moresi, M. 1
 Muse, J. O. 191
- Nickerson, K. W. 213
 Nielsen, H. K. 67
 Nielsen, R. 29
 Novak, J. T. 71
- Oliveira, J. E., de 64
- Parker, J. A. 248
 Piggott, N. H. 179
 Platt, M. W. 194
 Potgieter, D. J. J. 62
- Rehm, H. J. 188, 232
 Roels, J. A. 141
 Roozenburg, J. W. H. 141
 Rychtera, M. 39
- Sá-Correia, I. 24
 Scarfi, M. R. 251
 Schelding, W. 90, 145
 Schröder, E. 188
 Schügerl, K. 90, 145
 Sedlaczek, L. 155
 Shiotani, T. 96
 Shvinka, J. E. 15
 Steinitz, Y. L. 216
 Stoppok, E. 60
 Sugimoto, N. 128
 Suihko, M. L. 113
 Sutherland, I. W. 179
 Suzuki, S. 19, 197
 Swanson, J. D. 213
 Szczodrak, J. 107
- Takahashi, S. 175
 Tchorbanov, B. 165
 Thoma, M. 90, 145
 Toerien, D. F. 45
- Uden, N., van 24
 Usami, S. 128
- Veliky, I. A. 84
 Vered, Y. 117
 Viesturs, U. E. 15
- Wagner, F. 60
 Wilmańska, D. 155
 Worgan, J. T. 77
- Yamané, T. 96
 Zadrazil, F. 60

